

CRUISE CONTROL SYSTEM**1997 ACCESSORIES/SAFETY EQUIP General Motors Corp. - Cruise Control System****DESCRIPTION & OPERATION****Description**

Cruise control system components include: Powertrain Control Module (PCM) or Vehicle Control Module (VCM), cruise control module (electronic controller and electric stepper motor combined), cruise control switch, vehicle speed sensor, vehicle speed sensor buffer, and brake and clutch release switches.

CRUISE CONTROL MODULE

Cruise control module is mounted to master cylinder. Refer to **Fig. 1** . Module incorporates an electronic controller and an electric stepper motor. Stepper motor regulates throttle position in response to control module commands. Module is not serviceable.

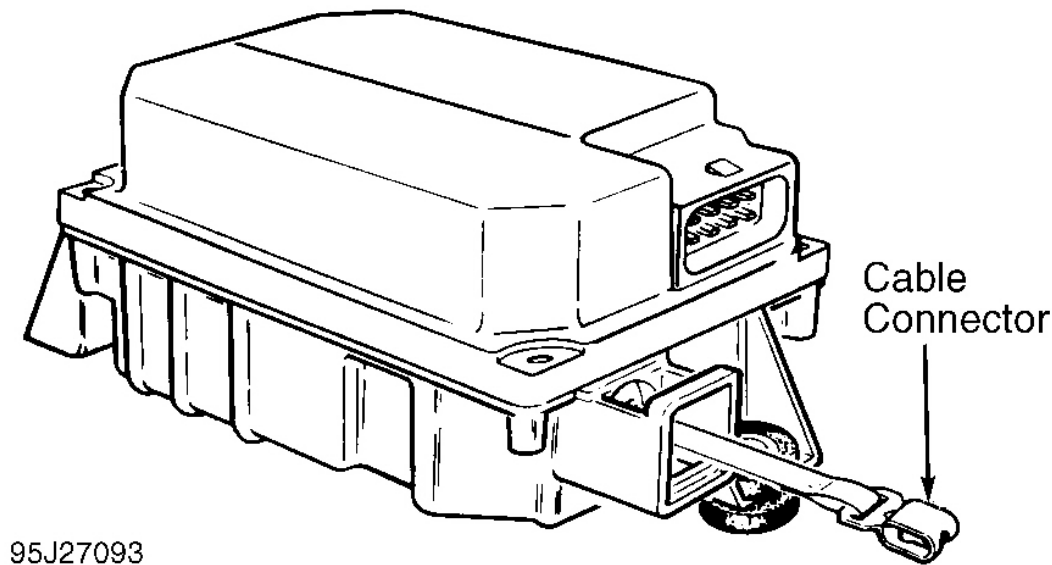


Fig. 1: Electric Motor Cruise Control Module (Typical)
Courtesy of GENERAL MOTORS CORP.

CRUISE CONTROL SWITCH

Cruise control switch, mounted on end of multifunction (turn signal) lever, controls system operational modes.

SET/COAST

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To set vehicle speed, turn control switch to ON position. With vehicle speed at 25 MPH or more, press and release SET/COAST button. Vehicle will maintain set speed.

To increase speed during engaged cruise, accelerate to desired speed. Press and release SET/COAST button. Vehicle will maintain new set speed.

To decrease speed during engaged cruise, press and hold SET/COAST button. System will disengage. When vehicle has slowed to desired speed, release SET/COAST button. Vehicle will maintain new set speed.

To decrease speed by one-MPH increments during engaged cruise, tap SET/COAST button (quickly press and release button; DO NOT hold button). Vehicle speed will decrease one MPH for each tap of button.

RESUME/ACCEL

To resume set speed after system has been disengaged by braking, momentarily engage and release RESUME/ACCEL switch. Vehicle will return to set speed. If RESUME/ACCEL switch is engaged for more than one second, vehicle will begin to accelerate. To accelerate using cruise control system, engage and hold RESUME/ACCEL switch until desired speed is reached.

To increase speed by one-MPH increments during engaged cruise, tap RESUME/ACCEL switch (quickly move to RESUME/ACCEL position and release). Vehicle speed will increase one MPH for each tap of switch. After 10 taps, system must be reset to a new speed to continue this function.

BRAKE & CLUTCH RELEASE SWITCHES

Brake and clutch release switches allow current flow to module when brakes and clutch are released. When brake or clutch pedal is depressed, voltage supply to cruise control circuit in PCM/VCM is interrupted. Brake switch may incorporate brakelight and torque converter clutch switch.

VEHICLE SPEED SENSOR

Vehicle Speed Sensor (VSS) is mounted in transmission (2WD) or transfer case (4WD). VSS produces an AC signal with a frequency proportional to speed at which transmission output shaft rotates, which is also proportional to vehicle speed. This signal is then sent to vehicle speed sensor buffer.

VEHICLE SPEED SENSOR BUFFER

Vehicle speed sensor buffer receives and converts AC voltage to a rate of 4000 pulses per mile. This signal is then sent to cruise control module, speedometer, and VCM/PCM. These components convert number of pulses per mile to pulses per second to determine speed of vehicle. Buffer is located on left side of instrument panel, near parking brake.

TROUBLE SHOOTING

1. Check fuses, and replace as necessary. Ensure cruise control cable and throttle linkage move freely. Some problems may be related to vehicle speed sensor circuit. Check for codes. See appropriate TESTS W/CODES article in ENGINE PERFORMANCE section. Refer to menu below.

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- TESTS W/CODES - 2.2L
- TESTS W/CODES - 4.3L

2. Check for a broken or partially broken wire inside insulation which could cause system malfunction but prove good in a continuity/voltage check with system disconnected. Visually inspect for broken or open wires. Ensure any aftermarket electronic equipment is properly installed.

TESTING

NOTE: Cruise control will be disabled if stoplights (including center high mounted stoplight) are not operating properly.

CRUISE CONTROL DOES NOT ENGAGE

1. Ensure BRAKE (10-amp) and STOP/HAZ (20-amp) fuses are okay. Turn ignition off. Disconnect cruise control module connector. Turn ignition on. Connect test light between cruise control module connector terminal "F" (Brown wire) and ground. If test light glows, go to next step. If test light does not glow, repair open or short to ground in Brown wire.
2. Connect test light between cruise control module connector terminals "F" (Brown wire) and "E" (Black/White wire). If test light glows, go to next step. If test light does not glow, repair open in Black/White wire.
3. Turn cruise control on. Connect test light between cruise control module connector terminal "B" (Dark Blue wire) and ground. If test light does not glow, go to next step. If test light glows, check for short to power in Dark Blue wire. If circuit is okay, replace cruise control switch.
4. Connect test light between cruise control module connector terminal "C" (Gray/Black wire) and ground. If test light does not glow, go to next step. If test light glows, check for short to power in Gray/Black wire. If circuit is okay, replace cruise control switch.
5. Connect test light between cruise control module connector terminal "A" (Gray wire) and ground. If test light glows, go to step 7). If test light does not glow, go to next step.
6. Connect test light between cruise control switch connector terminal A13 (Brown wire) and ground. If test light glows, check for open in Gray wire. If circuit is okay, replace cruise control switch. If test light does not glow, repair open in Brown wire.
7. Ensure ignition is on. Connect test light between cruise control module connector terminal "D" (Purple wire on A/T, Brown/White wire on M/T) and ground. If test light glows, go to step 10). If test light does not glow, go to next step (M/T) or step 9) (A/T).
8. Connect test light between clutch pedal position switch connector terminal "B" (Purple wire) and ground. If test light does not glow, go to next step. If test light glows, check for open in Brown/White wire. If circuit is okay, replace clutch pedal position switch.
9. Connect test light between brakelight switch connector terminal "D" (Brown wire) and ground. If test light glows, check for open in Purple wire. If test light does not glow, repair open in Brown wire.
10. Ensure ignition is on. Connect test light between cruise control module connector terminal "B" (Dark Blue wire) and ground. Press and hold SET/COAST button. If test light glows, go to next step. If test light does not glow, check for open in Dark Blue wire. If circuit is okay, replace cruise control switch.
11. Turn ignition switch to OFF position. Connect cruise control module. Disconnect PCM connector C2, or

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VCM connector C4. Turn ignition switch to RUN position. Using a DVOM, measure voltage at PCM connector C2, terminal "K" (Brown Wire), or VCM connector C4, terminal No. 3 (Dark Green/White wire). If reading is about 7 volts, go to next step. If reading is not about 7 volts, check for short to ground or open in Brown or Dark Green/White wire. If circuit is okay, replace cruise control module.

12. Turn ignition off. Reconnect VCM/PCM connector. Set parking brake. Start engine. Turn cruise control off. Turn cruise control on. After 3 seconds, press and hold SET/COAST button. Press and hold RESUME/ACCEL switch. Fully depress and hold brake pedal. After 10 seconds, release brake pedal. If engine RPM momentarily increases, check for poor connections at VCM/PCM. If connections are okay, replace VCM/PCM. If engine RPM does not momentarily increase, replace cruise control module.

CRUISE CONTROL DOES NOT RESUME, ACCELERATE, TAP-UP OR TAP-DOWN

Ensure BRAKE and STOP/HAZ fuses are okay. Disconnect cruise control module. Turn ignition on. Turn cruise control on. Connect test light between cruise control module connector terminal "C" (Gray/Black wire) and ground. Press and hold RESUME/ACCEL switch. If test light glows, check for poor connection at cruise control module terminal "C". If connection is okay, replace cruise control module. If test light does not glow, check for open in Gray/Black wire. If circuit is okay, replace cruise control switch.

REMOVAL & INSTALLATION

CAUTION: When battery is disconnected, vehicle computer and memory systems may lose memory data. Driveability problems may exist until computer systems have completed a relearn cycle. See **COMPUTER RELEARN PROCEDURES** article in **GENERAL INFORMATION** before disconnecting battery.

BRAKE & CLUTCH RELEASE SWITCHES

Removal & Installation

Remove electrical connectors from switch. Remove pedal bracket bolt. Remove switch from pedal bracket. To install, reverse removal procedure. Tighten pedal bracket bolt to 13 ft. lbs. (17 N.m).

CRUISE CONTROL CABLE

Removal & Installation (4.3L)

1. Remove and discard retainer. To install, attach cable bead to ribbon end fitting of cruise control module. Snap cable fitting over ferrule on end of conduit until snap is heard. Ensure cable is taut and ribbon is not twisted. Slide cable conduit over ribbon, and install in cruise control module.
2. Install cable fitting into rectangular slot in engine bracket. Snap cable fitting over throttle lever pin. Route cable over accelerator cable through retainer on right rear corner of engine. Flip adjuster lever down to lock cable. Ensure a 0-1 mm clearance exists.

Removal & Installation (2.2L)

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- 1. Remove and discard retainer. To install, attach cable bead to ribbon end fitting of cruise control module. Ensure cable is taut and ribbon is not twisted. Slide cable conduit over ribbon, and install in cruise control module. Route cable over refrigerant line (if equipped).
- 2. Rotate cam lever. Install cable slug into slot opening in throttle lever, and install wire into pulley groove. DO NOT twist or kink cable. Ensure cable slug is supported by sides of throttle cam lever.
- 3. Install cable fitting into rectangular slot in engine bracket. Connect cable locator clip to top of routing bracket mounted on rocker cover. Flip adjuster lever (Natural) down to lock cable. Ensure a 0-1 mm clearance exists.

CRUISE CONTROL MODULE

Removal & Installation

Disconnect negative battery cable. Remove cruise control cable. See CRUISE CONTROL CABLE. Disconnect electrical connector from module assembly. Remove cruise control module. To install, reverse removal procedure. Tighten cruise control module fasteners to specification. See **TORQUE SPECIFICATIONS** .

VEHICLE SPEED SENSOR (VSS)

Removal (A/T Models)

Disconnect negative battery cable. Raise and support vehicle. Disconnect speed sensor electrical connector. Remove speed sensor retainer bolt. Using Speed Sensor Remover/Installer (J-38417), remove speed sensor. Remove speed sensor O-ring from speed sensor.

Installation

To install, reverse removal procedure. Lubricate O-ring with transmission fluid. Tighten speed sensor retainer bolt to 97 INCH lbs. (11 N.m).

Removal (M/T Models)

Disconnect negative battery cable. Raise and support vehicle. Disconnect speed sensor electrical connector. Remove speed sensor retainer bolt. Remove speed sensor. Remove speed sensor O-ring from speed sensor.

Installation

To install, reverse removal procedure. Lubricate O-ring with transmission fluid. Tighten speed sensor bolt to 16 ft. lbs. (22 N.m).

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Pedal Bracket Bolt	13 (18)
	INCH Lbs. (N.m)

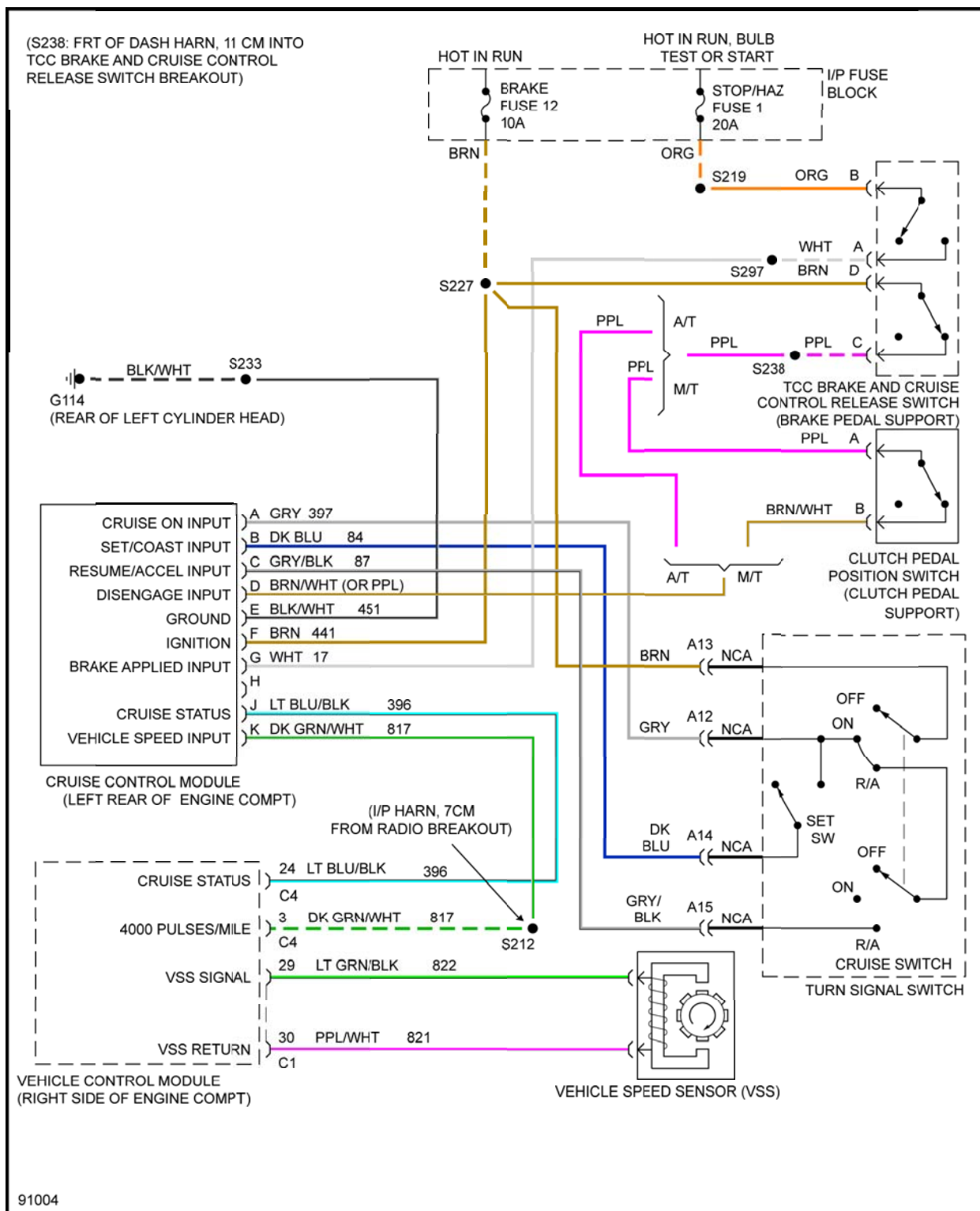
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Cruise Control Module Screws	40 (4.5)
Vehicle Speed Sensor Bolt	
A/T	97 (11)
M/T	(1)
(1) Tighten bolt to 16 ft. lbs. (22 N.m).	

WIRING DIAGRAMS

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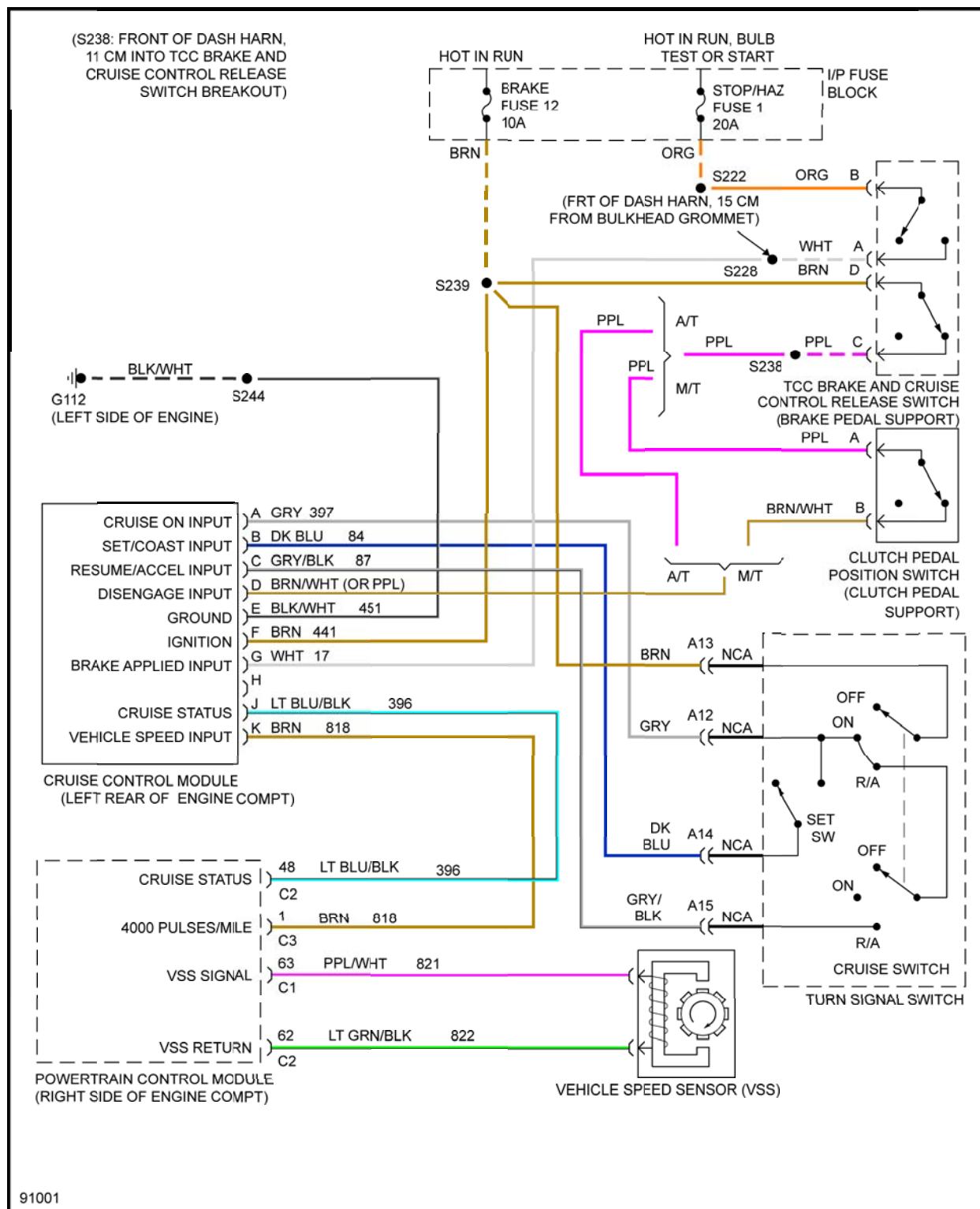
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Fig. 2: Cruise Control System Wiring Diagram (4.3L)

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Fig. 3: Cruise Control System Wiring Diagram (2.2L)